

blackish brown above, rupturing quite regularly along a middle zone the upper half adhering to pileus, but breaking up into two or three large pieces as the cap expands, and soon falling off. The lower part of the volva remains large and loose, with a very free margin, though somewhat appressed. Volva white within.

The growth of these fungi was much affected by weather. After a rain they would develop from the button stage to maturity in about two days. Dry, hot weather with bright sunshine seemed to retard the rapidity and luxuriance of growth, specimens then also being smaller. The bed on which they grew was quite warm slightly below the surface, showing that rapid decay of the mass was taking place.

The spores were smooth, oval, somewhat pointed at one end, and about 8 to 9×5 to 6μ , (6 to $8 \times 3\frac{1}{2}$ to 4 , Masee). When collected in a mass on paper they were of a rusty salmon color.

At this writing, Aug. 18th, the bed is still bearing.

LAWRENCE, MASS.

REMARKS ON VOLVARIA.

HOLLIS WEBSTER.

MR. Silsbee's observations on *Volvaria volvacea* furnish a peg on which to hang a few notes about the genus, which may be acceptable to readers who have gone no farther in the study of toadstools than to safeguard themselves by learning the characteristics of the poisonous Amanitas. For a Volvaria is much like an Amanita, and would surely be classed as one by a tyro in whose mind the image of the wrapper or volva has temporarily obscured such things as veils and rings, or the color of spores. Indeed the volva is more conspicuous in Volvaria, as a rule, than in any Amanita except *A. caesarea*, in which, as in the larger Volvarias, it consists of a large, fleshy bag that can not possibly escape notice. From the prominence of this wrapper the genus takes its appropriate name. Unlike Amanita, Volvaria has no partial veil, and hence no ring on the stem. In this, Volvaria is like Amanitopsis. But whereas both the ringed Amanita and the ringless Amanitopsis produce white spores, Volvaria spores are pink or flesh-colored. The same tint is usually to be seen in the gills,

if they are not too young. Amanitopsis and Volvaria, then, differ from Amanita in having no partial veil, and from each other in color of gills and spores. As in Amanita, the gills in Volvaria are usually free, and the stem is easily separable from the cap.

Neither in number of species nor in frequency of occurrence does Volvaria equal Amanita. Hennings, in Engler and Prantl (*Die Natürlichen Pflanzenfamilien*, 1898) gives the number of described species as follows:—Amanita, 56; Amanitopsis, 28; Volvaria, 36. And Lloyd (*Volvae of the United States*, 1898) mentions, as ascribed to this country, of Amanita, 28 species; of Amanitopsis, 10; and of Volvaria, 12.

With other pink-spored Agarics, the genus Volvaria has been traditionally regarded by mycophagists with suspicion. Recent writers, on the contrary, have placed several species in the list of edible kinds. But opportunities for experiment are so infrequent, or so local, that most mycophagists will probably remain doubters, and prefer to err on the safe side.

Besides the species observed by Mr. Silsbee, two others may be mentioned. The first is perhaps as beautiful and striking an agaric as the woods produce. *Volvaria bombycina*, a species reported from Europe, Asia, North Africa, and North and South America, is the most widely known. It is found on fallen and on living trees, of various species, often in New England on the sugar maple. Though widely distributed, it is nowhere common. It is pure white, covered on the cap with glistening, silk-like fibrils (whence the name), grows to be several inches across, and is sure to attract attention by its size, habitat, and large, baggy volva. On wilting or on being bruised, the pure white becomes stained with dingy brown. Though this Volvaria is well known to be edible, Cooke (*British Edible Fungi*, 1891, p. 228) says, perhaps over cautiously, it "is often eaten abroad, but we have never been induced to try it. Pink-spored species are, as a rule, suspicious." Though the writer has had repeated opportunities of seeing this species, he has found it only once or twice. It is brought as a great prize nearly every year, in July or August, to some Saturday exhibition of the Boston Mycological Club. And for the last two years a single superb specimen has been brought into Alstead, New Hampshire, to the School of Natural History, from a sugar grove in a neighboring town.

A second large species, *V. speciosa*, known in Europe, America,

and North Africa, is reported by McClatchie as abundant in California, and is said to be edible. It is grayish and very viscid. The same species is called poisonous by Bresadola, in his recent popular account of the edible and poisonous fungi of Middle Europe (*Funghi Mangerecci e Velenosi*, 1899).

Volvaria volvacea has been reported from a few other places in this country, but never in such abundance as in Lawrence. It is usually much smaller. It grows also in Europe and in Ceylon.

An interesting series of buttons, collected in Mr. Silsbee's locality, was shown to the writer by Mr. G. E. Morris. Even the smallest were very dark colored above — almost black — and with a velvety look. On the older ones, and on the ruptured volva, the color was less intense. There is little doubt that this species is edible, but caution is necessary.

Other species of *Volvaria* reported from this country are little known. One, *V. Loveiana*, found in Europe and in Canada (by J. Dearness, as reported by Lloyd) has a peculiar habitat — on decaying agarics (*Clitocybe*) and should accordingly be easily recognizable.

More information as to the occurrence of species of *Volvaria* in New England would be welcome. They may be easily preserved by drying.

CAMBRIDGE, MASSACHUSETTS.

MISCELLANEOUS NOTES ON NEW ENGLAND FERNS, — III.

GEORGE E. DAVENPORT.

(Presented to N. Eng. Bot. Club, Dec. 2, 1901.)

NOTE 5. SUBDIVISION OF THE NEW ENGLAND ASPIDIEAE. — In my last notes I explained my reasons for adopting *Athyrium* for *Asplenium filix-foemina* and now, as I intend adopting some generic changes in *Aspidium* it seems advisable to explain my reasons for doing so, and to preface my account of a most extraordinary fern by a synopsis of our New England *Aspidieae*.

The genus *Aspidium* as recognized by Prof. Daniel Cady Eaton in